

Claims:

Following is a complete listing of the claims pending in the application:

1. (Withdrawn) A set of microfeature workpieces, the set comprising:
a first microfeature workpiece including a plurality of first microelectronic dies, wherein individual first dies have a first integrated circuit, a plurality of first pads electrically coupled to the first integrated circuit, and a plurality of first conductive complementary structures on corresponding first pads; and
a second microfeature workpiece including a plurality of second microelectronic dies, wherein individual second dies have a second integrated circuit, a plurality of second pads electrically coupled to the second integrated circuit, and a plurality of second conductive complementary structures on or at least proximate to corresponding second pads, the second conductive complementary structures projecting away from the second dies and having openings configured to receive and interface with the first conductive complementary structures.
2. (Withdrawn) The set of microfeature workpieces of claim 1 wherein the first conductive complementary structures include an aperture configured to receive at least a portion of one of the second conductive complementary structures.
3. (Withdrawn) The set of microfeature workpieces of claim 1 wherein the first conductive complementary structures have male configurations and the second conductive complementary structures have female configurations.
4. (Withdrawn) The set of microfeature workpieces of claim 1 wherein the first complementary structures have a generally triangular, circular, or rectangular configuration.
5. (Withdrawn) The set of microfeature workpieces of claim 1 wherein the first and second complementary structures comprise solder.

6. (Withdrawn) The set of microfeature workpieces of claim 1 wherein:
the first microelectronic dies include a first side and a second side opposite the first side;
the first pads comprise a plurality of first bond-pads on and/or in the first side of the first microelectronic dies;
the first conductive complementary structures are coupled to corresponding first bond-pads on the first side of the first microelectronic dies;
the second microelectronic dies include a first side and a second side opposite the first side;
the second pads comprise a plurality of second bond-pads on and/or in the first side of the second microelectronic dies; and
the second conductive complementary structures are coupled to corresponding second bond-pads on the first side of the second microelectronic dies.
7. (Withdrawn) The set of microfeature workpieces of claim 1 wherein:
the first microelectronic dies include a first side, a second side opposite the first side, a first bond-pad on and/or in the first side, and a conductive link extending from the first side to the second side;
the conductive links have a plurality of ends defining the first pads on the second side of the first microelectronic dies;
the first conductive complementary structures are coupled to the first pads on the second side of the first microelectronic dies;
the second microelectronic dies include a first side and a second side opposite the first side;
the second pads comprise a plurality of second bond-pads on and/or in the first side of the second microelectronic dies; and
the second conductive complementary structures are coupled to the second bond-pads on the first side of the second microelectronic dies.
8. (Withdrawn) The set of microfeature workpieces of claim 1 wherein:
the first microelectronic dies include a third die;

the first pads include a third pad and a fourth pad adjacent to the third pad on the third die; and

the first conductive complementary structures on the third and fourth pads are spaced apart from each other by a distance of less than approximately 100 microns.

9. (Currently Amended) A microfeature workpiece, comprising:

a plurality of first dies, wherein individual first dies have a first integrated circuit and a plurality of first pads electrically coupled to the first integrated circuit; and

a plurality of first conductive mating structures at least proximate and electrically coupled to the first pads, the first conductive mating structures ~~projecting away from the first dies and having openings~~ projecting away from a surface of the first dies and configured to receive and interconnect with corresponding complementary second conductive mating structures on second dies which are to be mounted to corresponding first dies.

10. (Original) The microfeature workpiece of claim 9 wherein the first conductive mating structures have generally circular configurations.

11. (Original) The microfeature workpiece of claim 9 wherein the first conductive mating structures have generally triangular configurations.

12. (Original) The microfeature workpiece of claim 9 wherein the first conductive mating structures have generally rectangular configurations.

13. (Original) The microfeature workpiece of claim 9 wherein the first conductive mating structures include an aperture configured to receive at least a portion of one of the second conductive mating structures.

14. (Original) The microfeature workpiece of claim 9 wherein the first conductive mating structures have male configurations.

15. (Original) The microfeature workpiece of claim 9 wherein the first conductive mating structures have female configurations.

16. (Original) The microfeature workpiece of claim 9 wherein the first conductive mating structures comprise solder.

17. (Original) The microfeature workpiece of claim 9 wherein:
the first dies include a first side and a second side opposite the first side;
the first pads comprise a plurality of bond-pads on and/or in the first side of the first dies;
and
the first conductive mating structures are coupled to the bond-pads on the first side of the first dies.

18. (Withdrawn) The microfeature workpiece of claim 9 wherein:
the first dies include a first side, a second side opposite the first side, a bond-pad on and/or in the first side, and a conductive link extending from the first side to the second side;
the conductive links have a plurality of ends defining the first pads on the second side of the first dies; and
the first conductive mating structures are coupled to the first pads on the second side of the first dies.

19. (Original) The microfeature workpiece of claim 9 wherein:
the first dies include a third die;
the first pads include a second pad and a third pad adjacent to the second pad on the third die; and
the first conductive mating structures on the second and third pads are spaced apart from each other by a distance of less than approximately 100 microns.

20. (Original) The microfeature workpiece of claim 9 wherein the first conductive mating structures are formed on corresponding first pads.

21. (Currently Amended) A microelectronic die, comprising an integrated circuit, a plurality of bond-pads electrically coupled to the integrated circuit, and a plurality of first conductive mating structures on corresponding bond-pads, the first conductive mating structures ~~projecting away from the die directly from being electrically coupled to~~ corresponding bond-pads and having openings projecting away from the die directly and configured to receive and interface with corresponding second conductive mating structures on another microelectronic device to which the die is to be mounted.

22. (Original) The microelectronic die of claim 21 wherein the first conductive mating structures have generally circular, triangular, or rectangular configurations.

23. (Original) The microelectronic die of claim 21 wherein the first conductive mating structures include an aperture configured to receive at least a portion of one of the second conductive mating structures.

24. (Original) The microelectronic die of claim 21 wherein the first conductive mating structures have a male or female configuration.

25. (Withdrawn) A set of stacked microelectronic devices, the set comprising:
a first microelectronic device including an integrated circuit, a plurality of first pads electrically coupled to the integrated circuit, and a plurality of first conductive mating structures at least proximate to corresponding first pads; and
a second microelectronic device including a plurality of second pads and a plurality of second conductive mating structures at least proximate to corresponding second pads, wherein the second conductive mating structures project away from the second microelectronic device and have openings configured to receive and mate with corresponding first conductive mating structures of the first microelectronic device.

26. (Withdrawn) The set of stacked microelectronic devices of claim 25 wherein the first conductive mating structures include an aperture configured to receive at least a portion of the corresponding second conductive mating structure.

27. (Withdrawn) The set of stacked microelectronic devices of claim 25 wherein the first conductive mating structures have a male configuration and the second conductive mating structures have a female configuration.

28. (Withdrawn) The set of stacked microelectronic devices of claim 25 wherein the first conductive mating structures have a generally triangular, circular, or rectangular configuration.

29. (Withdrawn) The set of stacked microelectronic devices of claim 25 wherein:
the first microelectronic device includes a first side and a second side opposite the first side;
the first pads comprise a plurality of first bond-pads on and/or in the first side of the first microelectronic device;
the first conductive mating structures are coupled to corresponding first bond-pads on the first side of the first microelectronic device;
the second microelectronic device includes a first side and a second side opposite the first side;
the second pads comprise a plurality of second bond-pads on and/or in the first side of the second microelectronic device; and
the second conductive mating structures are coupled to corresponding second bond-pads on the first side of the second microelectronic device.

30. (Withdrawn) The set of stacked microelectronic devices of claim 25 wherein:
the first microelectronic device includes a first side, a second side opposite the first side, a first plurality of bond-pads on and/or in the first side, and a plurality of conductive links extending from the first side to the second side;

the conductive links have ends that define the first pads on the second side of the first microelectronic device;

the first conductive mating structures are coupled to corresponding first pads on the second side of the first microelectronic device;

the second microelectronic device includes a first side and a second side opposite the first side;

the second pads comprise a plurality of second bond-pads on and/or in the first side of the second microelectronic device; and

the second conductive mating structures are coupled to corresponding second bond-pads on the first side of the second microelectronic device.

31. (Withdrawn) The set of stacked microelectronic devices of claim 25 wherein the first conductive mating structures are formed on corresponding first pads and the second conductive mating structures are formed on corresponding second pads.

32. (Withdrawn) A set of stacked microelectronic devices, the set comprising:

a first microelectronic device including a first side, a second side opposite the first side, a plurality of bond-pads proximate to the first side, a plurality of conductive links coupled to corresponding bond-pads and extending from the first side to the second side, a plurality of first conductive mating structures aligned with corresponding conductive links on the second side, and a redistribution layer on the first side, the redistribution layer having a plurality of ball-pads electrically coupled to corresponding conductive links and/or bond-pads; and

a second microelectronic device including an integrated circuit, a plurality of first pads coupled to the integrated circuit, and a plurality of second conductive mating structures at least proximate to corresponding first pads, wherein the second conductive mating structures project away from the second microelectronic device and have openings configured to receive and interface with corresponding first conductive mating structures of the first microelectronic device.

33. (Cancelled)

34. (Withdrawn) A set of stacked microelectronic devices, the set comprising:

a first microelectronic device including a first integrated circuit, a first side, a second side opposite the first side, a plurality of first bond-pads proximate to the first side and electrically coupled to the first integrated circuit, and a plurality of first conductive mating structures at least proximate to corresponding first bond-pads; and

a second microelectronic device including a second integrated circuit, a plurality of second bond-pads proximate to the first side and electrically coupled to the second integrated circuit, and a plurality of second conductive mating structures at least proximate to corresponding second bond-pads, wherein the second conductive mating structures project away from the second microelectronic device and have openings configured to receive and mate with corresponding first conductive mating structures of the first microelectronic device.

35-59. (Cancelled)

60. (New) A microfeature workpiece, comprising:

a first die having an integrated circuit and a bond site electrically coupled to the integrated circuit;

a first conductive mating structure having an opening projecting away from a surface of the first die and configured to receive and interconnect with corresponding complementary a second conductive mating structure on a second die to be mounted to the first die; and

a conductive link in direct contact with the bond site and electrically coupling the second conductive mating structure to the integrated circuit of the first die via the bond site.

61. (New) The microfeature workpiece of claim 60 wherein the surface is a first surface and the first die includes a second surface opposite the first surface, and wherein the conductive link includes a via extending from the first surface to the second surface.

62. (New) The microfeature workpiece of claim 61 wherein the bond site is a first bond site, and wherein the conductive link forms a second bond site proximate to the first conductive mating structure.

63. (New) The microfeature workpiece of claim 62 wherein the second bond site corresponds to the opening of the first conductive mating structure.

64. (New) The microfeature workpiece of claim 62 wherein the second bond site is generally aligned with the opening of the first conductive mating structure.

65. (New) The microfeature workpiece of claim 60 wherein the first conductive mating structure has a generally circular configuration, a generally triangular configuration, or a generally rectangular configuration.